

## ABSTRACT

Embodiments of the present invention feature a method and apparatus for detecting  
5 defects, such as, leaks, component failure and adverse performance. One embodiment of  
the present apparatus for pumping fluid comprises a pumping chamber having an inlet and  
an outlet powered by a motor. The motor operates in pumping mode upon receiving a  
pumping signal. The apparatus further comprises at least one inlet valve in fluid  
communication with the inlet of the pumping chamber. And, the apparatus comprises a  
10 switchable valve in fluid communication with the outlet of the pumping chamber. The  
switchable valve has a closed position and an open position, and assumes the closed  
position upon receiving a close signal. A pressure measuring device is in fluid  
communication with the pumping chamber, between said inlet valve and switchable valve.  
The pressure measuring device determines a minimal pressure and first threshold pressure  
15 at a first time and a second threshold pressure at a second time. The control means  
calculates the slope of a line representing the difference of said first threshold pressure  
signal and said second threshold pressure signal over time and comparing the slope with a  
threshold decay value. And, the control means compares the minimal pressure to a  
minimal acceptable value. Deviations from such values represent a defect in the pump.

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